

3.5 Derivatives of trig functions

If x is measured in radians then what is dy/dx ?

$$y = \sin(x)$$

$$y = \cos(x)$$

$$y = \tan(x)$$

$$y = \sec(x)$$

$$y = \csc(x)$$

$$y = \cot(x)$$

Find the derivatives of (a) $y = x^2 \sin(x)$ and (b) $y = \cos(x)/(1 - \sin(x))$

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If $y = \sec(x)$ find y''

Find the equations of the lines that are tangent and normal to the graph of $y = \tan(x)/x$ at $x=2$. Take derivatives by hand but use your calculator to plug in $x=2$.

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Simple Harmonic Motion

position: $s=5\cos(t)$

velocity:

acceleration:

jerk:

When is the particle moving fastest?

When is the particle slowing down?

A graph showing two trigonometric functions over the interval $t \in [0, 6.28]$. The x-axis is labeled t and has tick marks at 0 , 1 , and 6.28 . The y-axis has tick marks at 5 , 0 , and -5 . The first curve, labeled $f1(x) = -5 \sin(x)$, is a sine wave starting at $(0,0)$, reaching a minimum of -5 at $t \approx 1.57$, and returning to 0 at $t \approx 3.14$. The second curve, labeled $f2(x) = 5 \cos(x)$, is a cosine wave starting at $(0,5)$, reaching a minimum of -5 at $t \approx 3.14$, and returning to 5 at $t \approx 6.28$. The label 'velocity and acceleration' is centered below the graph.

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